REMARKS

The following remarks have paragraph numbers which correspond to paragraph numbers in the Detailed Action. Reconsideration of the application is respectfully requested.

1. The abstract has been corrected.

2. Claims 13 and 14 have been amended to refer to claim 12.

4. Examiner has rejected claims 1 and 2 as being anticipated by JP 2-87472 (JP '472). With respect, it is submitted that claim 2 is not anticipated by JP'472.

An examination of JP'472 reveals that the electrode layer (2) is laid down in strips or dots in order to maximize surface area of the electrode and permit sufficient gas flow. This is necessary because the electrode is only microscopically porous and will not permit sufficient gas flow through the electrode. As shown in Figure 6 of JP'472, the electrode (2) does not cover a substantial portion of the electrolyte surface (1). In fact, as shown particularly in Figure 6, only a small proportion of the electrolyte surface is covered by the electrode.

By contrast, with the present invention, it is preferable to minimize the gaps between the claimed discrete elements in order to tightly pack the discrete elements on the electrolyte surface [see paragraphs 0014 and 0015 of the specification].

As well, it is apparent that JP'472 does not teach the application of electrode discrete elements in polygonal shapes. While Examiner has identified the square shapes in Figure 6, those are in fact the electrolyte surface marked as reference numeral 1, not the electrode, which is marked by reference numeral 2. The electrode in Figure 6 is shown either as lines, crossing lines, or dots. These are not polygonal in shape.

Neither does JP'472 teach towards the use of polygonal shapes, which permits tight packing to maximize the electrode area. JP' 472 teaches away from tight packing as the electrode strips or

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dots must be widely spaced to permit gas flow. In the present invention, the reactant gas flows through the electrode, and it is desirable to minimize the gaps between the discrete elements.

Therefore, it is submitted that JP'472 does not anticipate nor teach towards amended claim 11 or new independent claim 15. Each of these claims contains the limitation that the discrete elements have a polygonal shape.

5. Examiner has rejected claims 1-4, 12 and 14 as being anticipated by Ruhl et al Patent No. 6,361,892 (the "Ruhl reference"). With respect, it is submitted that the claims, as amended, are not anticipated by the Ruhl reference.

Ruhl teaches an electrode which defines microchannels, intended to permit even gas flow through the electrode. As stated in the abstract, the microchannels "achieves tailored local flow, pressure, and velocity distributions."

There are two primary distinctions between the teachings of the Ruhl reference and the present invention. First, in the present claims, the gaps are said to be substantially uniform. In the Ruhl reference, the gaps or microchannels vary widely in size, in order to optimize flow distribution, tailor gas velocity and pressure drop from the centre of the circular electrode out towards the periphery. Therefore, the gaps in Ruhl are not "substantially uniform" as claimed herein. Secondly, the microchannels taught by Ruhl are not linear, as they are in the present invention. The spacing between the columnar electrodes in Ruhl is irregular.

Additionally, it is claimed in the present invention that adjacent polygonal discrete elements share parallel edges. This is related to the limitation that the gaps be substantially uniform and linear. It is clear that the Ruhl reference does not teach discrete elements having parallel edges.

Ruhl does not teach towards a solution which includes parallel edges. As seen in Ruhl, the gaps or microchannels must vary in size in order to tailor or manage pressure drop and gas velocity through the cell. Perhaps the clearest indication of this teaching is found in claim 1 where it is said "...wherein said microchannel cross-sectional area increases progressively distal within the stack

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from said feed tube." As such, the columnar electrodes cannot have parallel edges, which requires uniform cross-sectional area of the gap or microchannel.

In the present invention, the gaps do not function to channel or control gas flow as in the Ruhl reference. Gas distribution is accomplished by a separate element which is not part of the claimed invention. In the present case, the gaps are primarily intended to relieve physical stress caused by mismatched rates of thermal expansion. The gaps are therefore minimized to maximize electrode area but still completely separate discrete electrode elements.

Therefore, it is submitted that the claims as amended are not anticipated by, nor suggested, by the Ruhl reference.

6-9. All remaining claims depend from claims 11, 12 or 15, and are therefore submitted to be patentable.

CONCLUSION

In view of the foregoing remarks and amendments, it is respectfully submitted that this application is in condition for allowance and allowance thereof is respectfully requested.

Respectfully submitted,

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